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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
YABUT, DANIEL D	
ART UNIT	PAPER NUMBER
3656	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,488	KIENER ET AL.	
	Examiner	Art Unit	
	DANIEL YABUT	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15,17-31,33-37 and 39-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,17-31,33-37 and 39-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 15, 17-31, 33-37, and 39-42**,are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent, EP 0557603 A1, in view of Oetzel, US Patent 2,554,874, and in further view of Shimazu et al., US Patent 5,526,905.

EP 0557603 A1 discloses a viscous torsional vibration damper, having two faces (Fig. 1), comprising a(n):

Re claim 15

- Annular damper housing (1), which can be non-rotatably connected with a machine shaft (at 11)
- Damper housing surrounding a working chamber (7) for receiving a flywheel (near 7)
- Working chamber being filled with a viscous damping medium (line 2 of abstract) wherein at least one of the two faces of the torsional vibration damper carries a fan plate (15) with radially inner and radially outer cooling ribs (17), the cooling ribs being arranged on at least two concentric graduated circles of the fan plate (Fig. 2)

However, as to **claim 15**, while EP0557603A1 discloses the fan plate having cooling ribs, it does **not** expressly disclose the fan plate having cooling channels.

Oetzel teaches the use of cooling channels (at 29) for the purpose of providing efficient circulation of air aong the disk, thus efficiently dissipating heat (C4 / L9-15).

Regarding **claim 15**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide cooling channels, as taught by Oetzel, in the device of EP0557603A for the purpose of providing a reducing weight and reducing manufacturing costs.

As to **claim 15 further**, EP 0557603 A1 as modified above does **not** expressly disclose the radially inner cooling channels having different geometrical dimensions than the radially outer cooling channels.

Shimizu et al. teaches the use of radially inner cooling elements (21; Fig. 5) having different geometrical dimensions than radially outer cooling elements (22; Fig. 5) for the purpose of creating a pressure drop that in turn induces air flow through the spaces (C11 / L16-21), thus improving the efficiency of the device.

Regarding **claim 15 further**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the radially inner cooling channels having different geometrical dimensions than the radially outer cooling channels, as taught further by Shimizu et al., in the device of EP0557603A as modified above for the purpose of creating a pressure drop that in turn induces air flow through the spaces, thus improving the efficiency of the device.

EP0557603A1 as modified above further discloses the following:

Re claim 15 (cont'd)

- Cooling channels formed between closed arched surface features (at 29) formed from the fan plate (C1 / L16-22) in a direction axially away from the working chamber (at 17; Fig. 1).
- Radial length (C15 / L5-6; Shimizu) and a width (C9 / L26) of the radially outer cooling channels (21) is greater than a ratio of the radially inner cooling channels (22)

As to **claims 17**, **21-23**, **28**, **33 and 39**, EP0557603A1 does **not** expressly disclose the ratios being between 3.5 and 1, as recited in claims 17, 33 and 39, the angular distance between adjacent radially outer cooling channels being between 3 and 7 degrees, as recited in claim 21, the angular distance between adjacent radially inner cooling channels being between 5 and 15 degrees, as recited in claims 22 and 23, and the radial spacing of the cooling channels amounts to between 20% and 100%of the length of the cooling channels, as recited in claim 28.

Regarding **claims 17**, **21-23**, **28**, **33 and 39**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide the ratios being between 3.5 and 1, as recited in claims 17, 33 and 39, the angular distance between adjacent radially outer cooling channels being

between 3 and 7 degree, as recited in claim 21, the angular distance between adjacent radially inner cooling channels being between 5 and 15 degrees, as recited in claims 22 and 23, and the radial spacing of the cooling channels amounts to between 20% and 100% of the length of the cooling channels, as recited by claim 28, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. ***Note:*** *("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05.)*

As to **claims 18, 34 and 40**, EP0557603A1 does **not** expressly disclose the cross-sectional surface of the radially outer cooling channels being smaller than the cross-sectional surface of the radially inner cooling channels.

Shimizu et al., teaches the use of a cross-sectional surface (at 122N; Fig. 32) of the radially outer cooling elements (122) being smaller than a cross-sectional surface (121R) of the radially inner cooling elements (121) for the purpose of adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels (C21 / L9-13).

Regarding **claims 18, 34 and 40**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the cross-sectional surface of the radially outer cooling channels being smaller than the cross-sectional surface of the radially inner cooling channels, as taught by Shimizu et al., in the device of EP0557603A1 as modified for the purpose adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels, thus promoting the efficiency of the device.

EP0557603A1 as modified above further discloses the following:

Re claim 19

- Radially inner cooling channels (121; Shimizu) being wider (at 121R) than radially outer cooling channels (at 122N)

Re claim 20

- An angular distance a between adjacent radially outer cooling channels (near 17; Fig. 2, upper region) is smaller than an angular distance of the radially inner cooling channels (near 17; Fig. 2, lower region).

As to **claim 24**, EP0557603A1 does **not** expressly disclose at least one of the radially outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees with respect to their radial lines.

Shimazu et al. teaches the use of radially outer and radially inner cooling elements being oriented at an angle of slope $\beta \leq 30$ degrees (Fig. 19; C14 / L42-43, L48-50) with respect to their radial lines for the purpose of narrowing the stagnation area to form a wide main stream area (C5 / L30-35), thus improving the cooling efficiency of the device (C15 / L56-62).

Regarding **claim 24**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide at least one of the radially outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees with respect to their radial lines, as taught by Shimazu, in the device of EP0557603A1 as modified above for the purpose of narrowing the stagnation area to form a wide main stream area, thus improving the cooling efficiency of the device.

EP0557603A1 as modified above further discloses the following:

Re claim 25

- The cooling channels are situated on different radial lines R (see 17 at upper and lower regions in Fig. 2)

Re claim 26 and 27

- The radially inner cooling channels are radially spaced with respect to the radially outer cooling channels (see 17 at upper and lower regions in Fig. 2).

Re claim 29 and 30

- Cooling channels with open ends on the radial side are formed in an arched manner (at 29; Oetzel) from a plane of their circular sheet metal blank (C1 / L16-22; Oetzel) and the cross-section of the cooling channels being sinusoidal (near 29; Oetzel)

Re claim 31

- An annular damper housing (1), which surrounds a working chamber (7) and to be filled with a viscous damping medium (line 2 of abstract)
- A fan plate (15) formed on at least one of two faces of the viscous torsional vibration damper (at 17), the fan plate having radially inner and radially outer cooling channels (at 29; Oetzel) arranged thereon in at least two concentric graduated circles.
- Cooling channels formed between closed arched surface features (on 29) formed from the fan plate (C1 / L16-22).
- Radial length (C15 / L5-6; Shimizu) and a width (C9 / L26) of the radially outer cooling channels (21) is greater than a ratio of the radially inner cooling channels (22)

Re claim 35

- Radially inner cooling channels (121; Shimizu) being wider (at 121R) than radially outer cooling channels (at 122N)

Re claim 36

- An angular distance between adjacent radially outer cooling channels (near 17; Fig. 2, upper region) being smaller than an angular distance of the radially inner cooling c(near 17; Fig. 2, lower region).

Re claim 37

- A heat transfer apparatus for use with a viscous torsional vibration damper (Fig. 1)
- A fan plate (15) operatively configured to be arranged on at least one of two face surfaces (at 17) of the torsional vibration damper when in use
- The fan plate includes radially inner and radially outer arranged cooling channels (17), the radially inner and radially outer arranged cooling channels (at 29; Oetzel) forming two concentric graduated circles on the fan plate (Fig. 2)
- Cooling channels formed between closed arched surface features (at 29; Oetzel) formed from the fan plate (C1 / L16-22).

- Radial length (C15 / L5-6; Shimizu) and a width (C9 / L26) of the radially outer cooling channels (21) is greater than a ratio of the radially inner cooling channels (22)

Re claim 41

- Radially inner cooling channels (121; Shimizu) being wider (at 121R) than radially outer cooling channels (at 122N).

Re claim 42

- An angular distance between adjacent radially outer cooling channels (near 17; Fig. 2, upper region) is smaller than an angular distance of the radially inner cooling channels (near 17; Fig. 2, lower region).

Response to Arguments

Applicant's arguments with respect to claims 15, 17-31, 33-37, and 39-42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL YABUT whose telephone number is (571)270-5526. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard W. Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL YABUT/
Examiner, Art Unit 3656
7/29/2009

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656